American Gas Journal

Formerly American Gas Light Journal

EST. 1859

VOL. 116, NO. 15
WHOLE NO. 3345

NEW YORK, SATURDAY, APRIL 15, 1922

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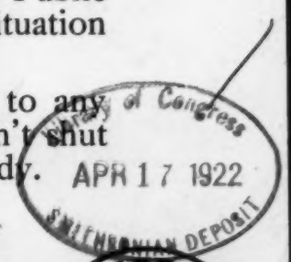

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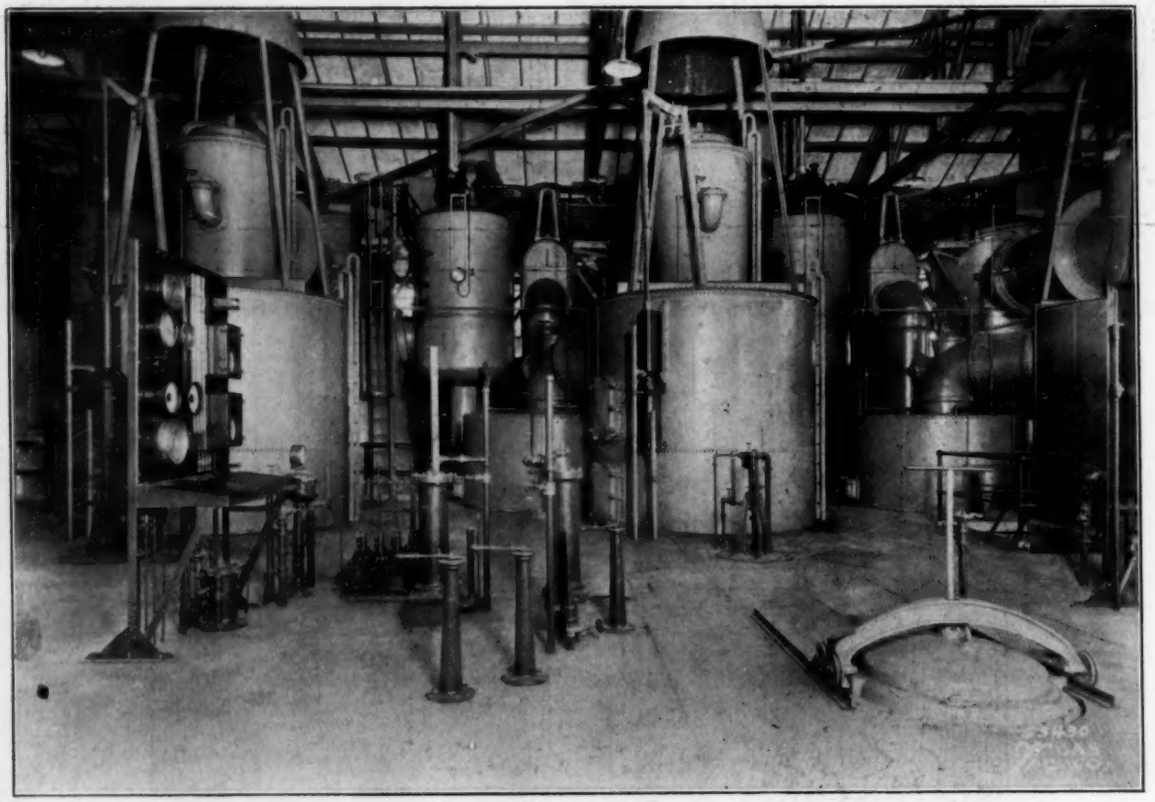

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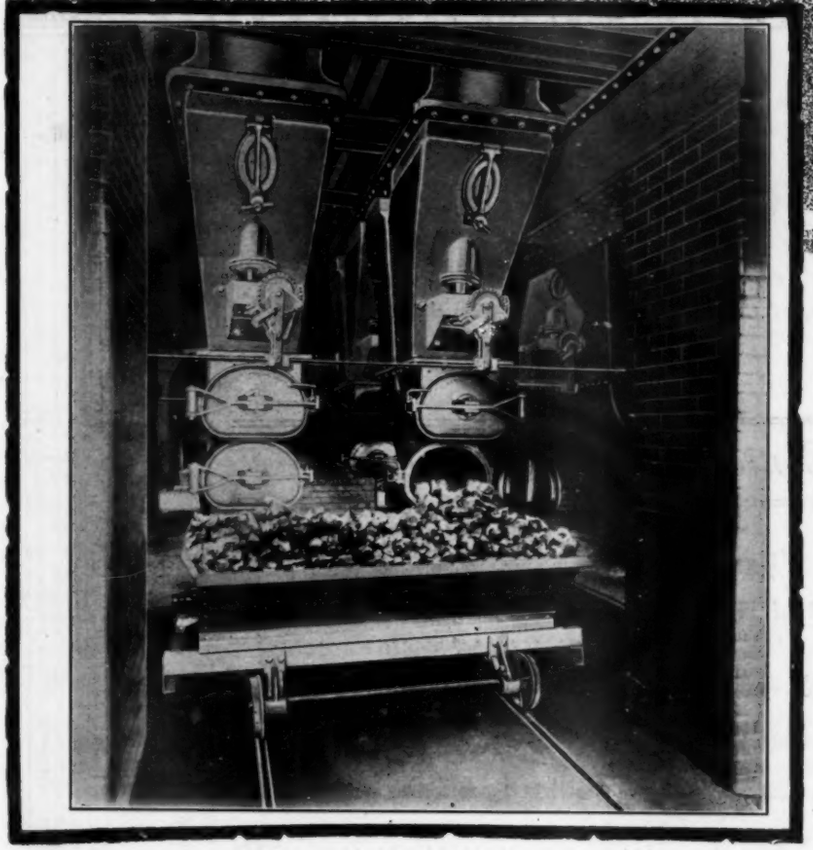

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American Gas Journal

SIXTY-THIRD YEAR

Published Weekly by American Gas Light Journal, Inc., 150 Nassau Street, NewYork, N. Y.

ELBERT P. CALLENDER, Pres. S. G. KRAKE, Vice-Pres.-Treas. A. M. GLEASON, Sec'y

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Western Office, Peoples' Gas Building, Chicago, Ill.—Roy W. Brown, Manager
Harrison 5938

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AMERICAN GAS JOURNAL. April 15, 1922. Vol. 116, No. 15.
Published weekly by American Gas Light Journal, Inc., New York, N. Y.
Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

American Gas Journal

Formerly American Gas Light Journal

Vol. 116, No. 15 NEW YORK, APRIL 15, 1922 While No. 3345

New Stack Type

Success in Europe Seems to Assure Adoption in Other Countries

By A. W. H. GRIEPE

The success attained by the Venturi-Evase-Prat type of stack in Europe not only during war time, but also in after the war period, will assure the adoption of this type of stack in other countries to an equal degree.

This system consists mainly of a stack of a shape similar to a Venturi tube, and a fan or blower. The discharge of the fan by means of a pipe is led into the stack terminating in a conical nozzle; the air under pressure creates a draft at bottom of stack, accelerating the natural draft; the blower driven by a motor with variable speed or direct connected steam turbine will take care of all draft conditions. Thus the induced draft system offers the most reliable way of meeting various load conditions.

The present article will show in general outline the advantages of the Venturi stack.

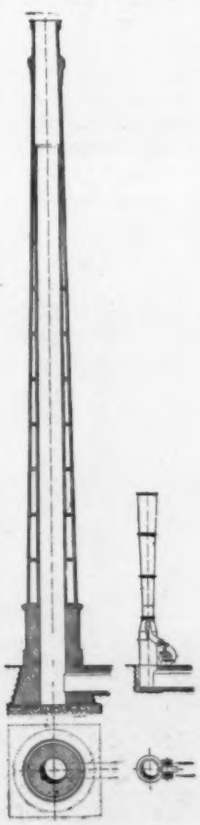


Figure 1

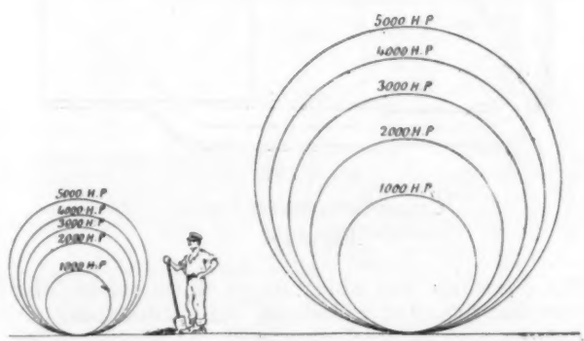


Figure 2

It may be stated that the system has the following points of superiority: Low cost of installation; flexibility of operation; low cost of maintenance.

Figures 1 and 2 show the comparison in size of Venturi and natural draft stacks. It will be seen that about one-third of the material is necessary for the Venturi stack than for natural draft stacks, not considering the heavy foundation for the latter type.

The objection of the low efficiency of the system has been overcome by new type of high-pressure centrifugal blowers, as is shown in Figures 3, 4 and 5, so that at present an efficiency of 0.3 to 1 per cent of the boiler output has been attained.

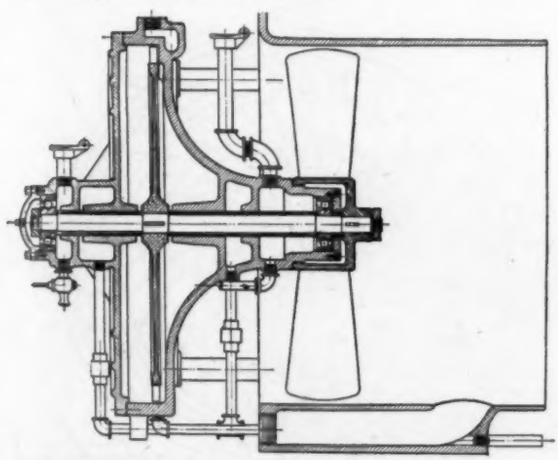


PLATE XIX

Coppus Turbo Blower Type B

Figure 3

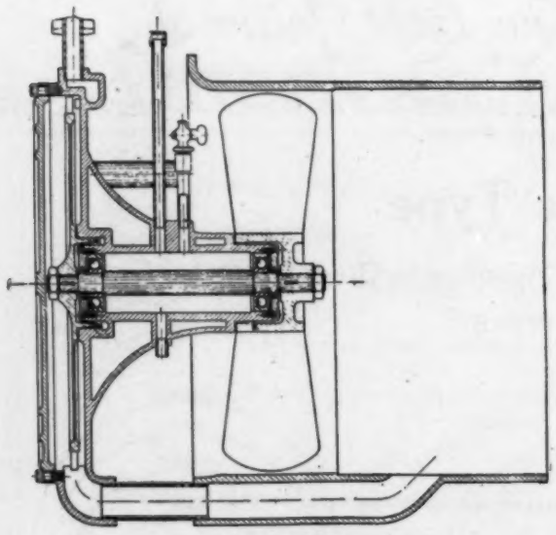


PLATE XVII

Coppus Turbo-Blower Type A

Figure 4

To overcome the objection to steel stacks, the writer has designed a concrete stack containing all the features of the steel stack, with the advantages of the concrete stack (Figure 6) thus reducing the height of the stack to be used two-thirds.

The various photos show that the stacks have been used in connection with all industries—steam plants, gas plants, chemical plants, mines, etc. The blower does not handle the hot gases, fumes, etc., assuring a long life to this apparatus, which cannot be said of systems where the hot flue gases are handled directly by the blower.

The gas industry will have to adopt, sooner or later, new methods to increase the efficiency of the plants and one of the most vital points is the cost of fuels. The Venturi stack will prove to be an immediate success, as this system will take care of all draft conditions due to the variation in the fuel used. In connection with waste-heat boilers, the first low cost of installation will appeal to any plant manager when the question of waste-heat apparatus is proposed. When the handling of obnoxious fumes is necessary the Venturi stack system will be found to be the only system that can be depended upon.

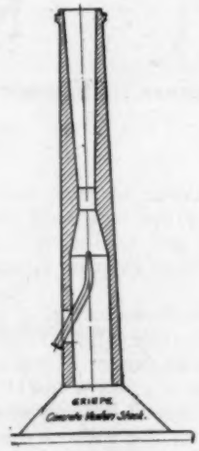


Figure 6

In the United States very few installations of this new stack system have been made, the largest one, to the writer's knowledge, being installed in the U. S. Steel Corporation plant (see photo). I believe this is partly due to the conservatism of the industries, as they are very cautious in adopting new systems, and partly due to the low efficiency claimed for this type of stack, but the introduction of the new design of high-pressure centrifugal blower has increased the efficiency to such degree that the Venturi stack system can compete with any system on the market.

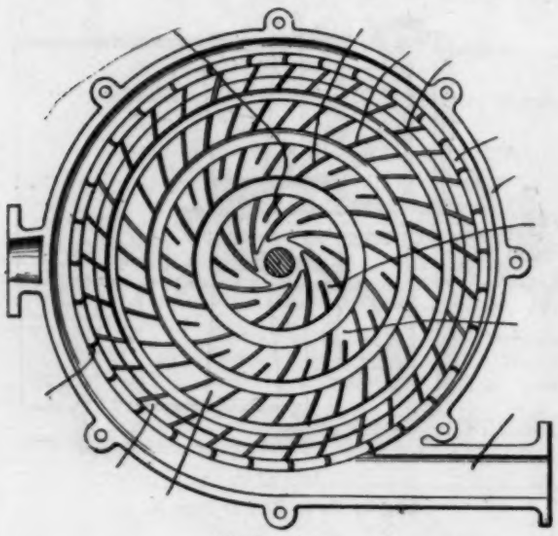
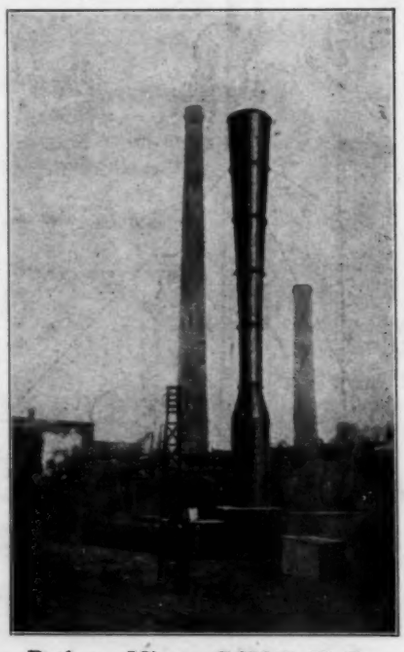
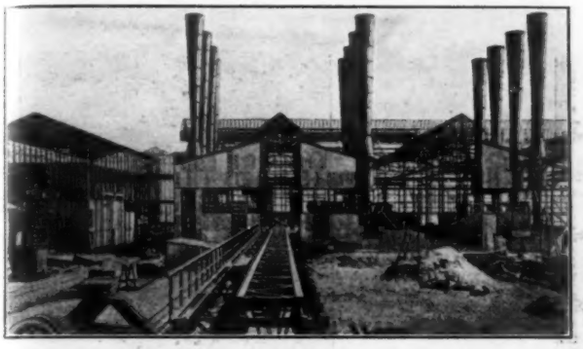


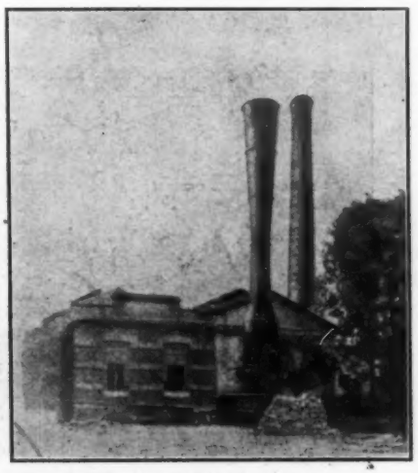
Figure 5



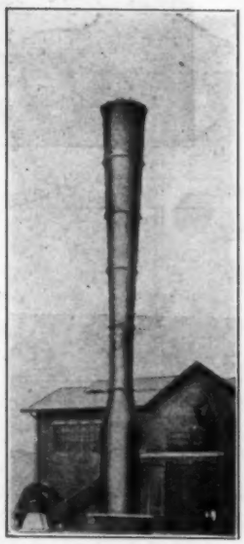
Bethune Mines—5,000 B. H.-P.



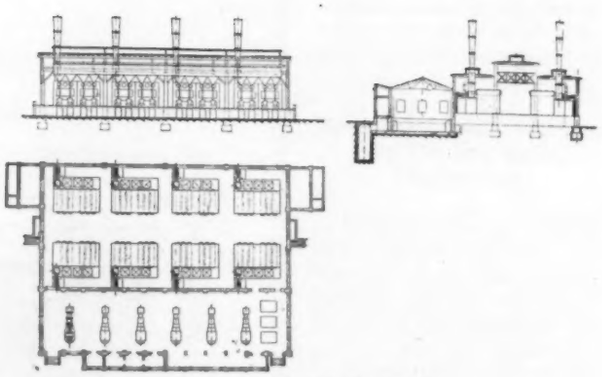
U. S. Steel Corporation



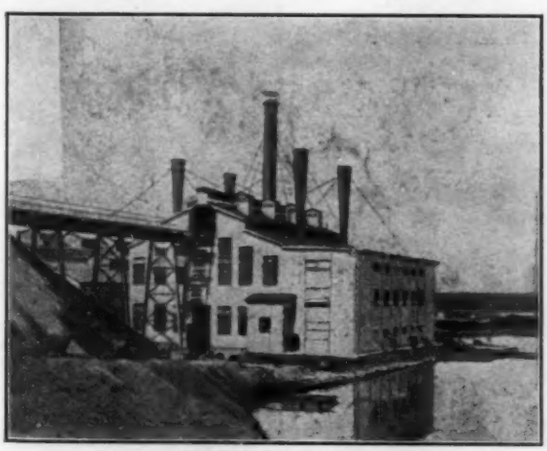
Venice—5,000 H.-P.



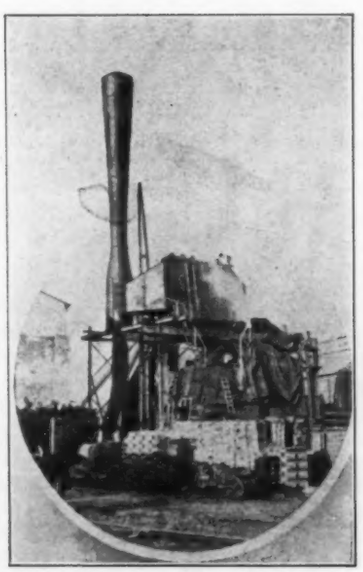
500 H.-P.

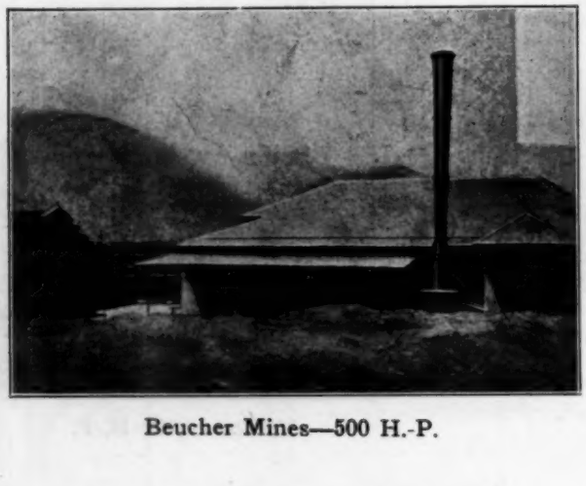


Trieste—40,000 B. H.-P.



Victoria Falls, S. A.—36,000 B. H.-P.

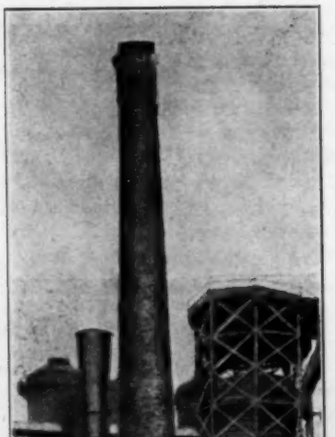




Beucher Mines—500 H.-P.

Gas Plant

Gas Plant



6,000 H.-P.

6,000 H.-P.

On the Removal of Naphthalene

A Study That Brings the Discussion of This Subject Up to Date

By O. L. KOWALKE and A. W. PESCH

The recent rather general revisions of gas standards from the high calorific value of about 600 B.t.u. per cubic foot to about 520 B.t.u. per cubic foot and the abolition of the candle-power requirements have given rise to new conditions. The service to the consumer is improved. Higher temperatures of distillation are possible and thereby increasing the yield of gas per unit of coal or oil carbonized, but the content of condensible hydrocarbon vapors may be decreased. Reductions of the content of condensible hydrocarbon will in general, leave dangerous amounts of naphthalene in the gas sent into the distribution system.

This paper, which was presented at the convention of the Wisconsin Gas Association, covers the work done during the current year under the Fellowship established by the association at the University of Wisconsin. — Editor.

Naphthalene is a white solid having a melting temperature of 176.9 deg. Fahr. and a boiling temperature of 424.4 deg. Fahr. It crystallizes in large thin plates and for that reason a relatively small amount can easily stop the flow of gas in a main or service pipe. The vapor tension is such that one cubic foot of air at 95 deg. Fahr. can carry 61.16 grains of naphthalene, at 50 deg. Fahr. it carries 6.66 grains, and at 32 deg. Fahr. 1.97 grains. Thus when the temperature of air falls below that temperature at which it is saturated with naphthalene, crystals will be deposited. When the temperature of the air is again raised some of the naphthalene may be evaporated and carried forward. Manufactured gas will carry more naphthalene than air owing to the solvent action of the condensible hydrocarbons present. Cooling such gas below the saturation temperature results in the condensation of both hydrocarbons and naphthalene in a liquid form.

To prevent naphthalene from being deposited in the mains and services several means may be employed:

(a) By preventing its formation during the process of carbonization.

(b) By separating it from the gas in the condensing and cooling apparatus.

(c) By washing the gas with a solvent, and

(d) By adding a solvent to the purified gas.

Preventing the Formation of Naphthalene During Carbonization

Much has been published regarding the proper temperatures for carbonization to avoid naphthalene, but all such data apply to low-temperature conditions and are not readily applicable to present practice. An extended discussion of this point is therefore not advisable. It has been claimed that heavy charges of coal in horizontal retorts prevent the formation of excessive amounts of naphthalene; that in vertical retorts, because the gas passes through the center and cooler portion of the charge, a smaller amount of naphthalene is made; that in carbureted water gas plants owing to the higher content of heavy hydrocarbon vapors naphthalene troubles are not so serious.

Removal of Naphthalene by Cooling and Condensing

Whether the gas laden with condensible and tar vapors shall be cooled rapidly or slowly is a question on which gas engineers are not agreed.

Rapid cooling of gas results in the formation of a large number of minute droplets or "fog" of liquid hydrocarbons held in suspension in the gas. Such a fine suspension or "fog" may be effective in dissolving naphthalene but it means that the gags must have a low velocity and be kept in contact with the "fog" for a long time. It has also been argued that rapid cooling causes too great a loss of the "illuminants" from the gas.

Slow cooling provides more opportunity for the gas, tar, and naphthalene to come to the equilibrium condition. During the slow rise of gas in a suitable condenser, the tar droplets have a chance to increase in size and fall downward. Thus, it is claimed, there is a slowly descending rain of tar droplets which effectively washes out both tar and naphthalene. The fine mist of tar must be completely removed from the gas or else the naphthalene is carried forward into the distribution system.

Much data have been published to show that condensation alone cannot remove naphthalene sufficiently complete so that no deposits will be found in cooler portions of the system. The tar "fog" and hydrocarbon vapors may carry naphthalene forward beyond the scrubbers. Tar, however, in the condensers, takes out much of the naphthalene from the raw gas with comparatively little cost. In many in-

stances the naphthalene content is so reduced that no trouble is experienced through further cooling.

Removal of Naphthalene by Washing with Solvents

To insure the removal of naphthalene to such an extent that cooling the gas to any temperature, however low, will not result in any condensation, a system of washing with a solvent is usually necessary. Among the solvents which have been used for this purpose are anthracene oil, creosote oil, lighter tar oils, petroleum fractions such as "gas oil," and tars.

Anthracene Oil—Anthracene oil is obtained from coal tar and is that fraction distilled above temperature of 270 deg. Cent. or 518 deg. Fahr. Because the boiling point is 94 deg. higher than that of naphthalene, anthracene oil contains practically no naphthalene. Pannertz claims that a good anthracene oil should yield, on a distillation test, 0 to 120 deg. Cent. yield 3 to 4 per cent; from 120 to 200 deg. Cent not over 3 per cent; from 200 to 270 deg. not over 4 to 8 per cent. The oil should not show any deposit after standing for one-half hour at 23 deg. Fahr. The absorbing power of anthracene is determined by passing gas saturated with naphthalene at the rate of about one cubic foot per hour through about 20 c.c. of oil. A good oil should reduce the naphthalene content to about 1.2 grains per 100 cu. ft.

A rotary scrubber of the "Standard" type with four bays is recommended with oil in each of the bays. It is well to remove the tar before scrubbing. Pannertz reports that he reduced the naphthalene in gas to about 1.6 grains per 100 cu. ft. by using a "Standard" washer, and about 0.12 pounds of oil per 1,000 cu. ft gas washed.

Washing with anthracene oil also removes some of the benzol and toluol. An oil of initial specific gravity of 1.111 will have a density of about 1.06 when no longer useful, due to the absorption benzol and toluol.

Bueb advises the addition of 4 per cent of benzol to anthracene oil to prevent the absorption of "illuminants." Oil so treated will absorb 25 per cent of its weight in naphthalene when used in a rotary washer consisting of three bags placed behind the P. & A. tar extractor.

Barth points out that for naphthalene washing only 0.25 to 0.50 pounds of oil are used per 1,000 cu. ft. of gas, while for stripping benzol 25 to 44 pounds of oil per 1,000 cu. ft. of gas are needed.

Bunte claims that naphthalene may exist in the gas in the form of fine crystals, especially when the gas has been cooled rapidly. In such case washing at 77 to 86 deg. Fahr. should be carried on in a rotary washer of several chambers.

Anthracene oil is not available at reasonable prices in this country. Hard pitch is the by-product in distilling tar for anthracene and since the market for hard pitch is limited, the tar distiller runs the end product to a soft pitch. In Europe hard pitch finds a ready market in the fuel briquetting industry.

2. Creosote Oil—Creosote oil has been used extensively for stripping benzol and toluol from gas and it is more easily obtained in this country than the anthracene oil. Naphthalene troubles have been experienced in plants where creosote oil was used for stripping benzol because in time the oil became saturated with naphthalene. In the process of removing the benzol and toluol from the wash oil, the temperature of distillation did not get high enough to drive out the naphthalene and through repeated use the wash oil became saturated.

Leathers used a tower scrubber wherein 10,000,000 cu. ft. of gas was treated with 200 gal. of creeosote oil, the oil being recirculated. As soon as the oil was saturated, naphthalene troubles began again. Distillation with steam removed the naphthalene and made the oil fresh for further use.

Branson reports on a plant where rotary washers were used with creosote oil. The light oils and naphthalene were distilled from the saturated oil, thus making the creosote oil available again.

Copp reports a similar method and claims that naphthalene was completely removed and that a better quality of benzol was obtained.

3. Lighter Tar Oils—These oils do not dissolve the "illuminants" from the gas so readily as anthracene and creosote oils. Should the lighter tar oils be fairly rich in benzol, they may even enrich the gas while at the same time removing naphthalene. Gas so enriched will not deposit naphthalene in the solid state.

At Derby, England, an oil called "Derby Solvene" was used in two bags of a "Standard" washer. The oil had the following characteristics: Specific gravity, 0.908; distillation test—up to 130 deg. Cent.—4 per cent; from 130 to 150 deg. Cent., 15 per cent, from 150 to 170 deg. Cent., 48.5 per cent; from 170 to 190 deg. Cent., 23 per cent; from 190 to 200 deg. Cent., 5 per cent; above 200 deg. Cent., 4 per cent. The oil contained a fair amount of xylenes and oils between toluol and creosote oil but it was not so volatile as benzol. The quantity of oil used was 0.1 gal. per ton of coal carbonized and the naphthalene was reduced to two grains per 100 cu. ft.

Bayer used an oil having benzol 0.4 per cent, light oil (100 to 180 deg. Cent.) 67.6 per cent, middle oil (180 to 230 deg. Cent.) 25 per cent, naphthalene 3.9 per cent, and heavy oil 3.1 per cent. The naphthalene was reduced by using this oil, but the mantles in some street lamps became blackened.

4. Petroleum Oils—The fraction from crude petroleum called "gas oil" has been used successfully as a solvent for naphthalene. In an oil gas plant in California naphthalene trouble was overcome by washing the gas with fuel oil; the heating value and candle-power were not affected. Calkins and Moorehouse report the use of Indian Territory gas oil for scrubbing carbureted water gas at Galveston. They used the oil in a washer and found that it absorbed twice as much naphthalene as their water gas tar. Bernauer used gas oil successfully and found that the use of the naphthalene laden oil subsequently in the carbureter of a water gas machine only increased the naphthalene in the gas by a very small amount.

5. Tars—Water gas tar has been used most frequently as a solvent for naphthalene, but tars from oil gas, vertical reteorts and specially collected coal gas tar have also been employed. Tars have been used both hot and cold with satisfactory results, provided the contents of water and naphthalene were low to begin with. The committee on naphthalene of the British Institution of Gas Engineers points out that there must be an intimate contact between tar and gas for a sufficient long time. When using hot tar there is less chance for absorption of light oils, a tendency for the tar to give up some "illuminants." and

a higher degree of solubility of naphthalenee. The use of cold tar has the advantage that the vapor tension of naphthalene is kept down and thus it is claimed that less naphthalene gets back into the gas.

Fletcher reports that naphthalene has been removed by circulating water gas tar in the hydraulic main in a steady stream. At the Caryl plant, in Liverpool, England, he used the three chambers on the inlet side of a "Standard" washer. The tar was run from a tank through a special regulating cock at the rate of fifty gallons per day for a make of gas of 800,000 cu. ft. With this ratio of tar to gas he was able to reduce the naphthalene from 9.5 grains per 100 cu. ft. in the raw gas to 3.4 grains per 100 cu. ft. By doubling the amount of tar and circulating it two or three times instead of once in the washer the naphthalene was reduced to between 3.5 grains and a trace per 100 cu. ft. gas. A good water gas tar will not eliminate naphthalene altogether, but makes the gas much easier to handle.

Wyant made a naphthalene scrubber from an old tubular condenser by removing the tubes and filling the shell with wooden grids. The shell was 6 ft. 6 in. diameter by 20 ft. high. A collecting tank was provided to catch the tar from seal in the water gas plant and also from the hot tar scrubbers. The tar at a temperature of 110 deg. Fahr. was circulated by a pump at the rate of eight gallons per 1,000 cu. ft. of gas. The gas from the retorts was passed in succession through primary condensers, the exhauster. immersion washers, the hot tar scrubber, and the secondary condensers.

The committee on naphthalene, American Gas Institute, described three water gas tar washing plants for naphthalene. At plant (E) there was used a steel sheel 8 ft. diameter by 22 ft. high, containing three layers of grids 4 ft. deep spaced one inch apart. The gas passed upward and the tar downward. The tar was circulated by means of a pump at the rate of 0.14 gal. per 1,000 cu. ft. gas, and was removed from the circulating well and renewed before becoming satu-

(*Continued on page* 354.)

Indiana Rates Low, Says P. S. C.

Issues Statement Showing Conditions in Hoosier State

As a quiet and dignified method of showing the people of the State of Indiana what they would lose should they be led into unthinking abolition of the Public Service Commission because of the clamor of political demagogues, John W. McCardle, chairman of the body, has just issued a statement that is being very generally circulated throughout the Hoosier State in which he outlines the results of a survey made of rates of all utility companies now operating in the State. The survey was made with a view to ascertaining whether the people of Indiana pay more or less for the vital services of gas, light and telephone than citizens of other States. The results, says "Hoosier Utilities," published by the Indiana Committee on Public Utility Information, bear out the frequently-heard statement that the rates in Indiana are, on the average, lower than those paid by consumers in other parts of the United States.

A resume of the information obtained in the survey follows

"In seventeen cities of the approximate size of Indianapolis, throughout the country, the single-line business telephone rate averages $9.41 per month. The rate in Indianapolis is $9, authorized a very short time ago

"In these seventeen cities the rate for single-line residence telephones averages $4.47 per month. The single-line residence rate in Indianapolis is $3.75.

"In forty-two cities outside of Indiana, with a population of from 10,000 to 20,000 the average rate for single-line business telephone is $4.74 per month. In fourteen cities in Indiana, with the same population, the average rate is $3.80 per month.

"In thirteen cities outside of Indiana, with a population of 5,000 or less, the average rate for single-line business telephones is $4.32. The average rate in fifteen cities in Indiana, with a population of 5,000 or less, in $3.05 per month.

"In thirty-nine cities outside of Indiana, with a population of from 35,000 to 100,000, the average single-line business telephone rate is $6.02 per month. The average rate in eight cities of the same size in Indiana is $5.84 per month.

Comparison of Cities

"In nine cities outside of Indiana and of the approximate size of Indianapolis, the gas rate averages $1.10 per thousand cubic feet. The rate in Indianapolis is 90 cents per 1,000 cu. ft.

"In twenty-six cities outside of Indiana, with a population of from 35,000 to 100,000, the gas rate averages $1.50 per 1,000 cu. ft. The average rate in eight cities of the same size in Indiana is $1.20.

"In twenty-seven cities outside of Indiana, with a population of from 10,000 to 20,000, the average gas rate is $2.07 per 1,000 cu. ft. In fourteen cities of the same size in Indiana, the average rate is $1.38 per 1,000 cu. ft.

"In four cities outside of Indiana, with a population of 5,000 or less, the average gas rate is $2.36 per 1,000 cu. ft. The average rate in fifteen cities of the same size in Indiana is $1.71.

"In thirtv-five cities outside of Indiana, with a population of from 10,000 to 20,000, the average electric light rate to the resident consumer is 10 cents and 5 mills per kw. hr. The average rate in fourteen cities of the same size in Indiana is 9 cents and 1 mill.

In thirty-one cities outside of Indiana, with a population of from 35,000 to 100,000, the average electric light rate to the resident consumer is 9 cents and 5 mills per kw. hr. The average rate in eight cities of the same size in Indiana is 7 cents and 7 mills per kw. hr.

"In ten cities outside of Indiana. with a population of 5,000 or less, the average electric light rate to the resident consumer is 10 cents and 4 mills per kw. hr. The average rate in fifteen cities of the same size in Indiana is 9 cents per kw. hr."

Will the Rope Sustain the Weight?

By J. B. DILLON

On page 580, Dec. 31 issue of the AMERICAN GAS JOURNAL, the writer gave a table for rope work. Daniel C. Haynes, chief engineer of the Kansas City Gas Company, called my attention to the fact that I expected too much of a rope and that he feared dire results if the figures were adhered to. Where there is doubt, there can be no certainty; therefore, the matter was referred to the Bureau of Standards and they assured me that the formula given, and the ultimate breaking strength of the rope as shown in my table was correct, but stated that they had no figures on the safe working load. The matter was submitted to the Whitlock Cordage Company, of Jersey City, and Louis I. Whitlock, of the company's New York office, writes:

"We believe that a constant of 4,000 would be safer, and also a factor of 5."

Considering the case from every angle, the writer then used the following formula, which I believe will pass all criticism and prove its worth in practice:

"The ultimate breaking load in pounds of a three-ply Manila rope, from one-half inch up to four and one-half inches, is found by multiplying 4,000 by the diameter of the rope in inches, this product to be multiplied by the diameter of the rope in inches, increased by one. The safe working load of the rope is one-fifth of the ultimate breaking load."

The table that follows is based upon the rules given with the exception that I purposely decreased the working load on a half-inch rope, believing that it is better to be safe than sorry:

Diameter in Inches	Ultimate Breaking Load in Pounds	Safe Working Load in Pounds
½	3,000	500
¾	5,250	1,050
1	6,000	1,200
1¼	11,250	2,250
1½	15,000	3,000
1¾	19,250	3,850
2	24,000	4,800
2¼	29,250	5,850
2½	35,000	7,000
2¾	41,250	8,250
3	48,000	9,600
3¼	55,250	11,050
3½	63,000	12,600
3¾	71,250	14,250
4	80,000	16,000
4¼	89,250	17,850
4½	99,000	19,800

From some figures given me by Mr. Whitlock, I find that their rope will do better than what I have shown but, as I am supposed to be dealing with various manufacturers' products, I have adopted a safe working margin.

As to the life of a rope, no iron-clad rule can be given, much depending upon the treatment given. A rope must never be exposed to acids or the elements.

Please destroy the table of Dec. 31, and use this one.

Bureau of Mines to Co-operate in Natural Gas Conservation Movement

Washington, D. C.—Industry should receive assistance, not competition, from the Government, Secretary Fall told the conservation conference of the Natural Gas Association of America in which producers and distributors of both the Mid-Continent and Eastern fields met at the invitation of the United States Bureau of Mines to establish closer co-operation between the industry and the Federal Government in their efforts to promote among the 2,500,000 consumers a more economical use of natural gas. Secretary Fall promised the active co-operation of the Department of the Interior in every possible way.

"It is the duty of the Government to go just as far as it can in assisting our industries and certainly it is the duty of the Department of Interior, as I understand it, to help you in developing the natural gas industry," Secretary Fall said. "I do not want the Government in competition with any of its business men. The Government is in business despite itself in oil and gas to some extent under the leasing law, but we endeavor to conduct that so as not to compete with, but to assist those engaged in the development of the industry."

Following a natural gas conservation meeting called two years ago by the late Secretary Franklin K. Lane, the various companies have been demonstrating to the public the proper methods of using gas in appliances and particularly have emphasized the use of natural gas under lower pressures.

"The natural gas companies have been making extraordinary efforts to reduce leakage and secure the greatest results possible from the gas used for their own necessary purposes and in this way considerable quantities of gas have been conserved," W. B. Way, secretary of the association said. "The consumers also have had brought to their attention the folly of using gas in inefficient fixtures and the necessity of adopting only those fixtures which will show reasonably economical results. Many cities also have consented to higher rates for gas, in this way bringing home to their citizens that gas is worth saving and in most cases, notwithstanding the higher rates, the consumer has been able to get as good results for the same cost per month as under lower rates."

The conservation committee of the association will endeavor to devise means of reducing the huge amounts of natural gas which are allowed to escape in the drilling of oil wells and a second committee will plan to disseminate information showing how maximum results may be produced from the use of the gas. The Bureau of Mines will co-operate closely in this work.

Members of the association who attended the conference are W. B. Way, E. J. Egan, H. A. Quay, S. W. Meals, G. F. Batchelor, John B. Corrin, J. E. McKirdy, T. B. Gregory, J. B. Tonkin, Alfred Hurlburt and L. B. Denning, president of the association, all of Pittsburgh, Pa.; Raymond Cross and W. O. Walker, of Oil City, Pa.; J. D. Creveling and Christy Payne, of New York; Charles Owen, Caney, Kan.; H. R. Davis, Buffalo, N. Y.; S. S. Allen, Jr., Columbus, Ohio; J. H. Maxon, Chicago, Ill.; Karl F. Griffith and F. L. Chase, of Dallas, Texas; E. R. Curtin, Jr., of Lima, Ohio; W. W. Freeman and H. J. Hoover, of Cincinnati, Ohio; John J. McMahon, of Cleveland, Ohio; R. K. Tallant, of Fairmont, W. Va., and J. W. Dana, of Kansas City, Mo.

Waste Heat from Chamber Ovens Used in Production of Steam

A Description of the Method Used in the Esslingen Gas Works

Translated and Adapted from the German Article in "Das Gas und Wasserfach"

The interest in this article lies in the fact that it represents a method of heat conservation which can be adopted by practically any gas plant, working under normal conditions. The author, Dr. Fischer, is the general manager of the Esslingen gas plant, which, while not very large, is progressive in adopting any method to decrease costs. The numerical data in the article are obtained from actual tests and permit an unbiased opinion to be formed regarding the practicality and desirability of applying the same or modified process to American practice and operating conditions.

In this gas plant, as in most gas plants, steam is used for a variety of purposes, both for heating and for power. The Esslingen plant also uses it for the production of coke gas, that is, producer gas Originally the plant possessed a standard water tube boiler installation, which made steam at six atmospheres; that is, 90 lb. per square inch pressure. In the practical application of this plan of saving the heat that was going to waste in the flue gases from the chamber apparatus, several points were kept in mind. First, it was desired to obtain steam of the same pressure as formerly; second, to avoid any great changes in the piping system; third, to utilize the waste heat without disturbing in any way the operation of the gas plant; fourth, to avoid any structural alteration in the furnaces. and fifth, to arrange the apparatus so that the single chimney possessed by the plant would suffice for the combined installation.

All these points were accomplished by introducing the water-tube boiler between the oven installation and the chimney. The arrangement of the apparatus is shown in the accompanying diagram. The gas plant has four gas generators in operation with a total consumption of 9,900 kg. (about 5,500 lb.) of coke a day. The new boiler is seen at 1 and is connected with the flue 5. The chimney is at 7. The arrangement of flues is such that the flue gases can be sent directly to the chimney or else are shunted through the boiler by opening or closing the valve or damper 6. The existing oven installation is shown at 2 and the new extension at 8. The discharge side of the installation is at 3 and the coal stock at 4. When the valve 6 was closed entirely and all the flue gases passed through the new boiler, the temperature of the flue gases was reduced to 195 deg. Cent. But then the suction through the retorts was not satisfactory and, in order to operate them efficiently, it was necessary to open the valve slightly, so that the suction effect of the chimney could be communicated to them directly. Only a small amount of heat was lost in this manner.

Heat Balance of the Process

To calculate the heat in the flue gases the following equation was used:

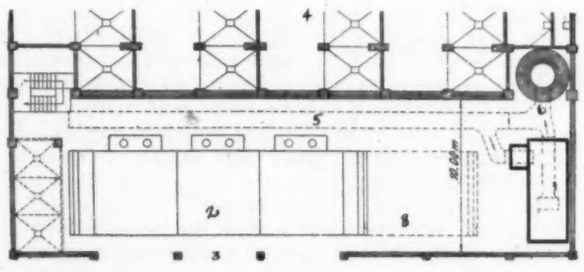
$$Q = KG\ (T_1 - T_2)\ cp.$$

In this formula, Q is the number of heat units in the flue gas per hour, K is the hourly quantity of combustible consumed, G the weight of the flue gas, T_1 the temperature of the flue gas before entering the boiler and T_2 the temperature of the gases leaving the boiler, and cp the specific heat of the gas; that is, the heat required to raise one kilogram of the gas one degree Centigrade. It is estimated that ten kilograms of flue gas will be produced for each kilogram of combustible burned. The hourly consumption of combustible is 9,900 ÷ 24 or 412 plus kilograms. The specific heat is about 0.28. The initial temperature of the flue gas is 500 deg. Cent. and the final temperature 250 deg. Cent., which is fixed at this point so as to allow sufficient suction from the chimney. We then have as follows:

$$Q = 412 \times 10\ (500 - 250) \times 0.28,$$

which is equal to 288,400 heat units per hour.

To produce one kilogram of steam at six atmospheres pressure, from feed water at 35 deg. Cent. and with 50 deg. Cent. superheat, that is a steam temperature of 209 deg. Cent., there is required 655 — 35 + 0.51 × 50 or 646 heat units. The figure 655 denotes the total heat in the steam in calories at the above



pressure. If the loss of heat due to radiation in the boiler is taken as 8 per cent. then from 288,400 calories there can be produced 0.92 × 288,400 ÷ 646. or 410 kilograms of steam at six atmospheres pressure. About 100 square meters of heating surface is necessary for the production of this weight of steam every hour. A boiler with a heating surface of 120 square meters and 20 square meters superheating surface was chosen. The saving in coke is calculated to be about 80 kilograms hourly on the assumption that every kilogram of coke will produce five times its weight in steam.

Actual Operating Data on Process

The following data were obtained in an actual test

of the installation: On the average about 412.5 kg. of coke were consumed in an hour, the heating value of which was 5,764 calories, when the moisture content of the coke is estimated roughly at 16.5 per cent. The temperature of the feed water was 37.6 deg. Cent. and about 547.5 kg. of water were converted into steam hourly. The pressure in the boiler was 5.62 atmospheres. The temperature of the superheated steam was 232 deg. Cent. The flue gases entered the boiler at 532 deg. Cent. and left at 195 deg. Cent. The loss in heat due to conduction and radiation amounted to 7.9 per cent. It is estimated that of the 5,764 heat units contained in one kilogram of the combustible, about 14.6 per cent was recovered in the boiler by the utilization of the residual heat and 0.8 per cent in the superheater or a total of 15.4 per cent. while 51 per cent of the heat contained in the gases escaping from the furnaces, which amounted to 661,000 heat units in toto, was recovered in the boiler and 3 per cent in the superheater. The loss in suction in the boiler amounted to 8 mm. of water. This experiment was carried out with the damper 6 closed tight and packed with cement.

Another practical test was made with the damper open for normal operation of the installation. In this case about 500 kg. of water were converted into steam hourly. The present installation in the Esslingen plant has been in constant operation since January of last year.

New Hospital to Care for Victims of Industrial Accidents

As a direct result of the world-wide experiments in rehabilitation of men injured in war, America has now a hospital dedicated solely to the care of industrial diseases and accidents and the restoration of industrial casualties to active useful life again. The Reconstruction Hospital, with the breaking of ground Sunday, April 2, for its new eleven-story addition at One Hundredth Street and Central Park West, New York City, now enters upon a national career, prepared to offer a unique service to industry.

The beginning of the new building marks the end of the first year at the present location, during which time the hospital's space and facilities have been taxed to their utmost. It is a new idea to have a hospital where men suffering from any of the many casualties of industry may receive the benefits of an intensive study of their cases by surgeons specializing in all the newest forms of therapy, combined with the complete aftercare of the patient until he is fit to earn a livelihood. Yet in the brief life of the present hospital, men have been sent from all over the country to take advantage of its unusual treatment, and many suffering from seemingly incurable physical ailments and distortions have been returned to useful industrial life again.

The addition to this new-style hospital will be of limestone and brick. It will have besides the usual equipment of a modern hospital the most extensive and complete physio-therapy plant in existence. There will be rooms for occupation therapy, especially designed equipment embodying the latest principles in rehabilitation, electro-therapy, and mechanical apparatus, whirlpool baths, so successfully developed by the military surgeons during the war, and a gymnasium where a score of mechanical devices assist the patient in recovering the fullest use of stiffened joints and weakened muscles.

The plans provide for space for 175 beds in small wards and semi-private rooms where women and children may be treated as well as men, and recreation and reception rooms for the older patients. There will be a radiophone to help in keeping the patients' minds toned upward as well as their bodies.

The total cost of the new annex will be $1,500,000. It is hoped to complete the first two stories at once to relieve the pressure on the present hospital in which an average of 175 cases receive treatment daily, half of that number being sent by the Government.

An interesting feature of the ground-breaking ceremony was the participation of two men who were patients in the hospital a year ago. At that time one of them was totally paralyzed below the waist as the result of a fall, and the other was unable to use his arms. Both have since been restored completely and were chosen to represent the hundreds of other men who, crippled through accidents in industries, have been restored and sent back to fields of productivity again.

Some idea of the type of public service being rendered by the Reconstruction Hospital may be gathered by a glance at the names of the men at its head. They are:

President, W. Gilman Thompson, M.D.; chairman of the board of directors, Allen Wardwell; vice-presidents, John A. Hartwell, M.D., Giraud F. Thomson; treasurer, Edward M. Townsend; secretary, Elwyn W. Poor.

Directors—Chester Alexander, A. W. S. Cochrane, Mrs. Carlos M. de Heredia, I. Wyman Drummond, Dr. John A. Hartwell, Dr. Victor G. Heiser, Robert C. Hill, Andrew C. Imbrie, Ralph M. Johnson, Frank H. Jones, Mrs. C. D. MacDougall, Right Reverend W. T. Manning, D.D., Francis R. Masters, Robert G. Mead, Gerrish H. Milliken, Miss Gertrude Parsons, Elwyn W. Poor, W. Emlen Roosevelt, Ralph S. Stubbs, Dr. W. Gilman Thompson, Giraud F. Thomson, Edward M. Townsend, George A. Vondermuhll, G. K. B. Wade, G. Owen Winston, Allen Wardwell.

Exhibits to Be Feature of the Natural Gas Convention

One of the most important features of the annual convention of the Natural Gas Association of America, and in fact the most interesting to the general public, is the display of machinery, gas saving appliances, light, heat and power commodities, under the auspices of the Association of Natural Gas Supply Men. This will be held in the main room of the Kansas City convention hall, and will be open to the public on Monday morning, May 15, at nine o'clock. Secretary William B. Way has prepared a chart of the booths that are to be built in the auditorium, 119 in all, and sent a copy of this chart to the firms and corporations that exhibited their wares at Cincinnati last year, as well as to many others who have requested an opportunity of exhibiting at the Kansas City meeting. It is here that the general public will assemble each day, and for that reason Mr. Way has paid particular attention to the facilities of the hall in order that the exhibitors may have all the chance in the world to set off their wares, and also that the admiring public may be in a position to get the proper viewpoint of the many interesting things on exhibit.

As the Journal Views It

Removal Notice

On and after April 22 the "American Gas Journal" will be located in the Dodge Building, 53 Park Place, New York City.

Increased Service Requires Larger Quarters

So greatly has the service of the AMERICAN GAS JOURNAL to the industry increased during the past several months that it has been found necessary to remove to larger quarters and on and after April 22 the main office will be in the Dodge Building, 53 Park Place, New York City. This new office which will add several hundred square feet of space is conveniently located and is in the most modern building in New York. Gasmen who have been in the habit of making the JOURNAL office their headquarters on visits to New York will find it ideally situated for reaching all parts of town quickly, while the added facilities which the increased space will allow will add to the value of the service which this magazine renders.

During the past several months the calls on the JOURNAL for direct service to the industry have increased enormously and this has made necessary the securing of larger quarters in order that all requests for service may be promptly handled. It is hoped that these calls will now be increased and that every gasman will feel that he is welcome to call on the JOURNAL at all times for whatever aid he may require.

The JOURNAL also wishes to extend a cordial invitation to all interested in the gas industry to make its office their headquarters when they are in New York and to consider it as their office. Spacious private offices for conferences, etc., will be available at all times and the entire staff of the JOURNAL will gladly be of any possible service.

More Baseless Attacks

The New York *World* has continued its attacks on the gas industry during the past week and, to a close reader, has been getting farther and farther away from the main question. In fact, so far afield has the writer of these articles gone that it has been impossible to discover just what has been meant by many of the statements made. But the most vicious part of the whole series has been the fact that a mass meeting has been called at which different civic bodies will be represented. This move would be a splendid thing were the premise correct; but when a campaign has been builded on the assertions of an examiner who, it is admitted, is not capable of giving expert testimony, then there certainly is something radically wrong somewhere

After reading the articles printed in the *World* one would be inclined to believe that the newspaper would employ a shoemaker to handle its legal matters when experts at law told the truth regarding a situation. But this is not so, for we have been a witness for the *World* in a libel suit and we know that the *World* employs the finest type of counsel.

It is hard to understand the working of a mind that would conceive a series of attacks such as have been made during the past week, for they are obviously so unfair and biased that they lack influence.

We believe that the Public Service Commission will continue its investigation of the changing of the standard required in New York City from candlepower to B.t.u., and that it will not be swept away by any such attacks as these, even if they are backed up by a clamor that is easily traceable to its source. The *World* has been led astray through overzealousness.

How the Coal Strike Looks

The situation in the coal strike, which began on April 1, remains practically unchanged at this writing, although it can be said that progress has been made which will allow for a settlement within a short time. The belated activities on the part of the Government have had no material effect on the situation; and although it is said that both operators and miners have been advised unofficially to get together, the Government has devoted itself to playing politics with a most important matter.

After going into the matter to some length we are convinced that the settlement of the strike will come within the next few weeks. We understand that steps looking toward a satisfactory agreement are being taken, but nothing has been made public and no official announcement can be made until a settlement has been made. But we feel that the gas industry can look hopefully forward to having its coal shipments resumed within the near future.

On the Removal of Naphthalene

(*Continued from page* 349.)

rated with naphthalene. The temperature employed in the washer was 105 deg. Fahr. Plant (F) used a steel shell 8.5 ft. diameter by 24 ft. high filled with grids made of half-inch boards spaced one-half inch apart. The temperature of the scrubber was maintained at 118 deg. Fahr. The tar used contained about 7 per cent naphthalene before use and about 25 per cent when it was discarded. It was suggested here that air at 180 deg. Fahr. be blown through the discarded tar to remove the naphthalene and then to conduct the warm air with its charge of naphthalene to the boilers or to the benches. Thus the tar could be used over again. At plant (I) tar was used at the rate of 0.05 gal. per 1,000 cu. ft. gas from inclined retorts and at the rate of 0.072 gal. per 1,000 cu. ft. gas from horizontal retorts. The tar, initially, was practically free from naphthalene and when discarded contained 7.75 per cent and 11.29 per cent respectively when used for gas from inclined and horizontal retorts respectively. A rotary washer of the "Standard" type was used and the temperature was kept at about 70 deg. Fahr.

J. A. Brown describes an installation where a scrubber was placed at the outlet of the carbonizing chambers, so arranged that condensed tars and liquors or a mixture thereof could be circulated with a pump. Scrubbing with hot tar resulted in complete absorption of naphthalene and no decrease in heating value. A hot tar scrubber of this type, 4 ft. diameter by 36 ft. high was erected at Peoria, Ill. Tests now show more naphthalene at outlets from mains than at the works.

Zwarg maintains that using water gas tar alone in a rotary washer will not reduce the naphthalene below 17.5 grains per 100 cu. ft. gas. He recommends the use of water gas tar in the first chamber of the washer only and anthracene oil for the second chamber. The tar is to be discarded when the fraction between 392 and 518 deg. Fahr. after cooling for one hour at room temperature deposits 21 per cent of solid naphthalene.

Mann at Cleveland used 400 gal. of anthracene oil in each of four sections of a Kloenne washer. A new charge of 400 gal. was added every second day to the top section and the others moved down; thus each batch remained in the washer eight days. The oil absorbed 35 per cent by weight of naphthalene. Owing to the cost of anthracene oil, water gas tar was substituted, and 400 gal. of tar added to the washer each day. About 25,000 cu. ft. of gas were treated per gallon of tar. The washer was used continuously.

Removal of Naphthalene by Introducing Solvent Into Purified Gas

The deposition of naphthalene can be prevented by introducing a hydrocarbon vapor which condenses at the same temperature as naphthalene, and produces a liquid solution of the naphthalene that can be collected in the drips. In small plants where the expense of a washing equipment is not feasible; in plants where benzol and toluol are stripped from the gas, but where some naphthalene may still be left; in plants where the gas may have a heating value of 500 B.t.u. or lower and be deficient in condensible hydrocarbons, the introduction of a condensible hydrocarbon at the outlet of the holder or the outlet of of the purifier has been found to be a satisfactory means of preventing deposits of naphthalene. The hydrocarbons that have been employed for this purpose are solvent and heavy coal-tar naphthas, condensates from the compression of oil gas, light petroleum (paraffin) oil such as white spirit, and burning oil or kerosene. The oils have been introduced into the mains as a liquid and allowed to run to the drips, as a finely atomized mist, and as a vapor produced by heating the oils.

A committee of the British Institution of Gas Engineers reports that at most plants petroleum oils were used which had a fairly high boiling point. Since only a comparatively small portion of these oils can be picked up by the gas through evaporation, it was necessary either to vaporize the oils with heat or to atomize them when putting them into the mains. In case of the more volatile oils, both the Livesey and rotary washers were used.

Because of its cheapness, availability and effectiveness, kerosene was used a great deal.

W. Fletcher describes some installations for introducing the solvent as used in Liverpool, England. One of these consisted of a rectangular cast-iron box divided by a horizontal partition. A four-inch gas inlet and outlet pipe was fitted onto the upper compartment; oil from an overhead tank was fed through a sight feed into the upper chamber; steam at 15 lb. per square inch was fed in at the bottom. The oil was thus vaporized and passed with the gas and steam into the distribution system. About 8.5 per cent of the oil was vaporized and the remainder was allowed to run to a seal pot. The second installation consisted of a steel shell 2 ft. 2 in. diameter by 3 ft. 11 in. high fitted with six-inch gas connections at the bottom and top for inlet and outlet respectively. A closed copper heating coil ninety feet long was mounted inside and fed with steam at 40 lb. persquare inch. The oil was fed in at the top of the vaporizer and allowed to drop on the hot copper coil; the unvaporized portion of the oil drained out through a siphon. Here twenty-five gallons of oil were used to treat 2,250,000 cu. ft. of gas per day with a residue of 1.5 gal. per day.

Glover recommends that a burning oil of 0.78 to 0.82 specific gravity be used and that it should vaporize readily at 300 to 320 deg. Fahr. The oil should be introduced at the outlet of the purifiers or at the inlet of the holder and it was claimed that twenty-five gallons would treat one million cubic feet daily under ordinary conditions.

Vince, at Minehead, England, used a gas heated vaporizer capable of vaporizing 0.75 gal. of oil per hour with 60 cu. ft. of gas. The oil vaporized was three gallons per week for an output of 500,000 cu ft.

Parkinson claims that fifteen gallons paraffin burning oil (kerosene) are sufficient to deal with one million cubic feet gas containing twelve grains naphthalene per 100 cu. ft.

Davidson believes that introducing a solvent into the mains is the cheapest way to control naphthalene deposits. The amount of solvent necessary will depend on the nature of the gas, but that ten gallons of solvent per million cubic feet of gas is sufficient. The solvent should be one the great bulk of which distills over between 266 and 392 deg. Fahr.

The committee from the British Institution of Gas

Engineers reports that about 10 per cent of the gas is by-passed through the vaporizer and then mixed again with the main stream. Mixing of the two streams should be made promptly in order to produce as fine a mist as possible.

Sharp bends should be avoided at the point where the mixing occurs.

Spraying or "atomizing" the oil into the main is another method of introducing the solvent. According to the report to the British Institution of Gas Engineers in some cases the oil is atomized with compressed gas and in other cases the oil is pumped under high pressure through a jet. It is essential that the spray be very fine in order to carry far, and that sharp bend in the pipe immediately ahead of the spray be avoided.

Botley atomizes the oil with compressed gas at 25 lb. per square inch. He prefers a refined petroleum oil not exceeding 0.80 sp. gr. and claims that the mist is carried to the end of the system.

Kennedy, at Colorado Springs, dropped gasoline into the mains by means of a device consisting of a sheet-iron tank fitted with a regulating valve and a pipe that entered the main ahead of the governor. Gasoline was fed at the rate of ninety drops per minute and during the winter of 1913 he used 188 gal. at a cost of $33.84.

Developments in Gas Technology

Important Information Gathered from All Parts of the World

By ISMAR GINSBERG, B.Sc., Chem. Eng., Associate Editor

Carbonization of Coal, Shale, Etc.

This process, which has been patented in British Patent No. 174,676, is for the purpose of distilling, carbonizing or vaporizing carbonaceous materials such as coal, lignite or oil shale. It has been found that when these materials are heated in a retort in such a manner that the evolved vapors are immediately withdrawn through the coolest part of the material into a discharge conduit, in some instances gas continues to be given off from material which has passed through the coking stage. This gas produces a back pressure in the outer zone beyond the coking zone which may be sufficiently high to force the gas through the coking zone. In this way cracks are produced in the coke, and in the end it is disintegrated altogether. The carbonaceous material is heated in a vertical retort by means of an external combustion chamber, and the vapor products are drawn off through a perforated conduit which extends upwards through the center of the retort and is closed at the top. In this invention the upper end of the take-off conduit is provided with a valve which is adapted to open in the event of excessive gas pressure in the outer coked layers of the charge and in the space above the charge.

Ammonium Sulphate

The South Metropolitan Gas Company, of London, England, has obtained a patent on a process of making neutral sulphate of ammonia from the crude salt which is obtained from coke-oven gases by the direct or semi-direct process. The crystals which are produced in the saturator are usually too fine for neutralization by means of ammonia in a centrifugal machine, while if the crystals are stirred up with the ammonia solution the amount of solution used would dissolve a considerable proportion of the sulphate. In this process the crystals are stirred with the mother liquor, which has been made sufficiently alkaline with ammonia to produce a neutral sulphate in one application. The ammoniacal mother liquor is oxidized by means of air until no further precipitate is produced, and then filtered. This liquor is then used for treating the crystals, the quantity of the liquor being about three times the weight of the crystals. (British Patent No. 174,878.)

Water Gas

Water gas is generated by passing water vapor, superheated by passage through conduits surrounding the fuel bed, through the fuel, which is at a temperature of 2,750 deg. Fahr. or over. In this manner a continuous production of gas may be maintained without the addition of air or oxygen. A detailed description of the apparatus is given in British Patent No. 174,245. Nickel plates are provided in the apparatus to act as a catalyst in the conversion of carbon monoxide in the evolved gas into methane.

Benzol Production in Gas Plant

In the German journal *Gluckauf*, volume 57, pages 1249 to 1251, there are given a number of hints relative to increasing the production of benzol in a recovery plant. The various parts of the apparatus are described in detail and the construction of the same is shown. The wash oil should be as thinly liquid as possible and should contain very little water, naphthalene and anthracene. The oil must be well distilled and the more volatile products removed, so that the finished product contains only 0.5 per cent of constituents which boil at 180 deg. Cent. The oil should be cooled to about 25 deg. Cent. before being used. The steam that is used to drive off the low boiling point products must be as dry as possible.

Removing Sulphureted Hydrogen from Gas

After the ammonia in the gas has been removed, the gas is treated with alkaline carbonate solutions containing at least 7 per cent of the alkali. The treatment takes place most conveniently at a high temperature. The hydrogen sulphide is absorbed and then driven out of the solution, and the latter may then be used over again in the process. (German Patent No. 346,310.)

Water Content of Coal Tar

In the German journal *Wasser und Gas*, volume 12, page 279, there is discussed the relation between the water content in coal tar and the manner of operating the retorts. Variation in the moisture contained in tar occurs mostly when the temperature at which the distillation of the coal takes place in the furnace fluctuates. It is possible to determine the temperature of the distillation process by the amount of water found in the coal tar. Too high a moisture content in coal tar causes all sorts of technical difficulties in its working.

Coke Briquettes

Coke dust is mixed with anthracene oil, lignite tar oil, water gas or oil gas oil, and the like. Only small quantities of these oils need be used. The mixture is then pressed into briquettes at a high temperature. For further details see French Patent No. 520,508.

Extracting Sulphur from Spent Oxide

The spent oxide is placed in an extractor tank provided with suitable charging and discharging openings. The solvent, benzol, is kept in a tank situated at a higher level and the liquid is allowed to run down by gravity and fill the extractor until the spent oxide is entirely covered. The solvent is allowed to remain in contact with the oxide for about one hour, during which time it extracts a large amount of sulphur from it. The solution is then syphoned into a still, while an additional quantity of solvent is permitted to flow into the extractor so as to remove the surplus still contained therein. The solution of sulphur in the still is then distilled, the jacket of the still being heated with steam. Both water and benzol vapors are evolved and passed through a water separator, from which the benzol is recovered. The sulphur is allowed to accumulate in the still, and after a sufficient quantity is collected it is melted and allowed to flow out through a suitable opening. After all the sulphur has been extracted from the spent oxide, steam is passed into the double jacket of the extractor and the benzol, still contained in the solvent, is distilled off. This process has been patented in the United States and assigned to the Stevens-Aylsworth Company. (See United States Patent No. 1,404,199.)

New Use for Ammonia

According to the experiments recently conducted by the well-known Italian chemist Professor Garelli, ammonia may be used to good advantage in the manufacture of soap. This is accomplished by the addition of an excess of common salt to the ammonia soap and by subsequent working up of the filtered liquor.

Steam Consumption in Various Ammonia Recovery Processes

The article entitled above, which appeared in *Gas und Wasserfach*, volume 65, pages 17 to 20, gives in detail calculations of the steam consumption in various ammonia recovery processes under the conditions prevailing in coke-oven and gas works. The indirect, semi-direct and Otto direct processes are discussed. The conclusion is drawn that in gas works practice no saving has been effected by any of the more recent processes, because the extra power required to force the gas through the saturators more than counterbalances the additional steam otherwise required for distillation. In coke-oven practice a considerable saving is possible owing to the use of blowers of greater mechanical efficiency. In the Otto direct process, in which tar is separated at a temperature of 75 deg. Cent., notwithstanding the temperature, a small quantity of liquor charged chiefly with ammonium chloride condenses. If this is run into the saturator an impure sulphate results and it must consequently be run away or distilled. The conclusion is that the direct process offers little inducement for adoption by gas works. Coke-oven works use it only because they cannot obtain a strength of ammoniacal liquor equal to that of gas works by other processes of recovery.

Coking Coal Dust

In German Patent No. 341,788 there is described a process of converting coal dust into coke and of burning the same in a furnace. In order to prevent the fine particles of coke from fritting together, they are collected in a cooling chamber from which they are conducted to the furnace by means of a current of gas. This gas consists of the non-condensable constituents of the coke gas produced from the coking of the coal dust in the retort, which is heated externally.

Tumefaction of Coal

Earl Bunte, in the German journal, *Gas und Wasserfach*, volume 64, pages 681 to 683, discusses the results obtained in the tumefaction, that is swelling, of anthracite coal. In this process coal tar (10 per cent of tar and 3 per cent of benzol) is obtained as the principal product, while semi-coke and gas are the by-products. The semi-coke may be converted into gas in a gas producer or else ground up into a fine powder in suitable grinding mills and burned as coke dust in furnaces or finally compressed to form briquettes after the addition of pitch. The tumefaction gas, which has a calorific value of 7,000 heat units, is mixed with twice its weight of water gas, which has a heat value of 2,750 heat units. The mixed gas has an average heat value of from 4,000 to 4,300 calories per cubic meter. The tar may be treated to recover therefrom benzol and lubricating oil.

Hard Metallurgical Coke from High Volatile Coal

A hard coke, which can be used for metallurgical purposes, can be made from coal, which contains a high percentage of volatile matter, by a process described in German Patent No. 341,480. The coal is first subjected to a preliminary distillation, which is carried out to such a point that the content of volatile matter in the coal becomes just that necessary for actual complete coking without the addition of binding agents. Another process consists in taking the coal, which has been predistilled, cooling it and grinding it and then coking it in the usual way. The time of the duration of the operation and the amount of heat added are so determined and regulated that the content of volatile matter in the coal is decreased to less than 32 per cent, calculated on the dry basis, when the treated coal is to be converted into coke in a beehive oven, or to less than 23 to 28 per cent, when the coal is to be coked in a by-product oven Coals with a high moisture content are dried until they contain less than 2.5 per cent of water.

Herman Russell Now Vice-President

Elected Recently by Board of Rochester Gas & Electric Corporation

The recent election of Herman Russell as a vice-president of the Rochester Gas & Electric Corporation marks another step forward in a career that should prove an inspiration to all men in the gas industry who are striving to get ahead. Mr. Russell has been general manager of the company since Feb. 21, 1919, and his recent elevation was greeted with great satisfaction by all of the employees of the company.

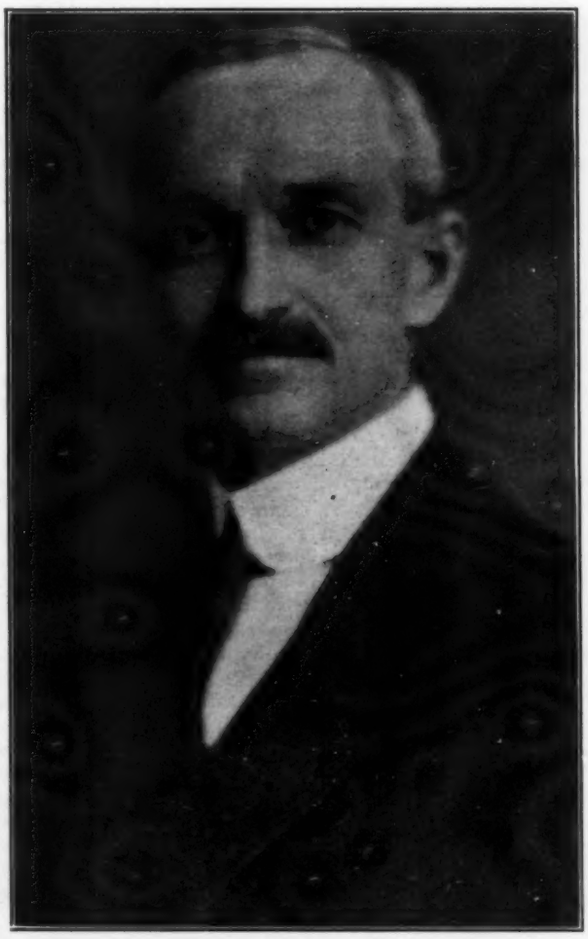
Herman Russell was born in Manistee, Mich., in 1878, and grew up in the environment which characterized the pioneer family in what was part of "the Great West." His father, Edwin Russell, and his mother, Fanny L. Russell settled in Manistee in 1871 and were part and parcel of the indomitable group who converted an undeveloped region into what it is to-day.

Mr. Russell received the home training and education of parents who were unusually gifted in making the most of life. His father was a man of wide experience in lumbering and in the general hardware and grocery business. He played a prominent part in developing the white pine industry of which Manistee was the largest center in the United States. Both of Mr. Russell's parents were artistic, were lovers of nature, fond of sketching, painting, photography and writing. The family spent much time in the woods, and general holidays were devoted to ball playing, fishing and other outdoor sports.

Herman Russell grew up therefore in a healthy environment, working as a boy in the lumber business and the store, running the floating logs in the mill pond with his companions, going to school, fishing and taking care of his father's garden. He retains vivid memories of the lumbering industry, the forest fires, the rough and ready woodsmen, the log drives and log rafts, and the wide-open town where the woodsmen spent their winter's earnings in a few wild days. Mr. Russell became a judge of trees, knows the various kinds and their characteristics both standing and as lumber, and will himself make good managerial timber.

Inheriting from his parents a studious mind, Mr. Russell entered college when sixteen years old and four years later completed the first stage of his scientific education in the University of Michigan at Ann Arbor. He was graduated in 1898 and took up post graduate work in chemistry and gas engineering, receiving a master's degree in 1900. One result of his post graduate work was the winning of the first scholarship for $500 established in 1900 by the Michigan Gas Association. This scholarship was the first serious attempt, established after much debate on the part of educators, to teach gas engineering, and has led to the establishment of gas engineering courses in the colleges throughout the country. Mr. Russell took the scholarship seriously and visited the larger cities in Michigan to acquire first-hand knowledge of gas industry. Through these visits he became acquainted with the experts in the business and mastered the details of gas-plant operation.

After leaving college, Mr. Russell immediately entered the public utility business in the employ of the Detroit Gas Company, and in 1902 he was promoted to become assistant superintendent of the company. This position formed a stepping stone to that of superintendent of the gas manufacturing department of the San Francisco Gas & Electric Company, of San Francisco, Cal., which he filled from 1903 until 1904, while the company was experiencing some very trying labor troubles. The Gas & Electric Company



Herman Russell, Vice-President and General Manager of the Rochester Gas & Electric Corporation

of Cincinnati appointed him assistant superintendent of gas manufacturing in 1904, and while there he became interested in Rochester.

The Rochester Railway & Light Company secured the services of Mr. Russell as assistant superintendent of the gas works in 1905, and in 1906 he was made superintendent of the gas manufacture for the company. With the increasing growth of the company,

and the consequent need for expansion in the management, Mr. Russell was again promoted and became assistant general manager in 1914. His advancement to the very responsible position of vice-president is the logical recognition of managerial ability of a high order, and as such is not only extremely gratifying from the personal point of view, but inevitably assures a very definite and certain increase in the prosperity of the company.

Mr. Russell has had a guiding hand in many of the major improvements and extensions within the company. The gas works, while under his immediate supervision, was largely overhauled, many improvements were made and much new machinery installed. The new gas works—West Station—is the embodiment of the years of study and practice in the art of gas making which he, together with President Searle, devoted to the subject, and stands as a monument to the best which has been developed in the United States and in foreign countries.

It is also significant that many of the purely office functions of the company have been materially improved under Mr. Russell's direction, notably in the work of auditing, accident prevention, employment, transportation, coke sales, shops and by-product recovery.

As a business man, Herman Russell is a scientist. an engineer and an organizer. A scientist with the strict technique of the business at his finger ends, an engineer with the trained judgment of the man of affairs, and an organizer improving a personnel machine to meet every need and contingency in a large and peculiarly intricate business. Throughout the industry he is known as one of its best informed gasmen.

Personally, Mr. Russell is a simple gentleman with unusual endowments of heart and mind. He knows human nature and is quick to recognize good as well as bad qualities in others. Like all scientists, he is somewhat retiring, and like other big men of affairs somewhat modest. He is approachable and friendly. He has keen perceptions, so that with native sensitiveness, reinforced by knowledge and experience he understands and has sympathy for human problems. As a consequence he often modifies the more or less rigid laws of business to see that deserving employees receive when necessary something more than strict equity. With a personal creed of hard work and fair play, Mr. Russell enjoys a good time and wants every employee under his direction to make the most of life. When he does fish or play golf and tennis it is with an enthusiasm which results in large catches, good scores and renewed health and friendships.

Mr. Russell is affiliated with the American Gas Association, the National Electric Light Association, and is a member of the Rochester Chamber of Commerce, the Rochester Club, the Oak Hill Country Club, the Y. M. C. A. and other organizations.

It has been said that those who get ahead cannot tell how it is done This is not true of Mr. Russell. By example and precept he teaches how to look beyond the day's work, and points out the whys and wherefores which influence the business decisions of the hour. His special precept is, "To become familiar with the work of one's immediate superior." His friends and business associates, especially the organization which he now fully directs, predict that success will always be his, and that his new position will be another round in the ladder of well deserved advancement.

J. P. Pulliam, Newly-Elected President of the Wisconsin Utilities Association

Chamber of Commerce Appoints Committee to Report on Trade Associations

Washington, D. C.—Appointment of a committee to study and report on the subject of trade associations has been announced by the Chamber of Commerce of the United States. The committee will direct its inquiry with a view to determining in what manner trade associations can render the greatest service to business and the public. It will hold its first meeting at the headquarters o fthe chamber here on April 5.

Members of the committee are Philip H. Gadsden, chairman, Philadelphia, president American Electric Railway Association and formerly member of Federal Electric Railways Commission, vice-president United Gas Improvement Company; Thomas S. Adams, New Haven, Conn., secretary National Tax Association, professor of political economy at Yale University; Fred R. Babcock, Pittsburgh, formerly president National Wholesale Lumber Dealers' Association and of the Pittsburgh Chamber of Commerce, president Babcock Lumber Company; Charles J. Brand, Pittsburgh, formerly chairman Cotton Distribution Board and chief of Bureau of Markets, Department of Agriculture, vice-president and manager United Fruit Growers, Inc.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity	Apr. 13, 1922 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	106¾	107¼
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	93	94
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	92½	93
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	106	107
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	89¼	90
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb. 1, 1925	109½	110
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	75	78
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	91	93
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	97	99
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	98¾	99¾
Hudson County Gas Co.	First 5s	Nov. 1, 1949	87	89
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	89½	90
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	99¾	101
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	88	90
Milwaukee Gas Light Co.	First 4s	May 1, 1927	91	91½
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	89¾	90
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	105½	106
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	94¼	95½
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	88	88¼
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	93	93½
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	88	89
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	83½	85
Southern California Gas Co.	First 6s	Nov. 1, 1950	96	98
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	88	96
Washington Gas Light Co.	General 5s	Nov. 1, 1960	91	92½
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	87¾	89

Gas Earnings Show Gain in Surplus

Newport News, Va.—By drastic reduction of operating expenses the management of the Newport News & Hampton Railways, Gas & Electric Company was able to more than overcome a loss of $214,929 in its gross revenues last year, according to a preliminary statement of earnings for the twelve months. Gross revenues were $2,550,268 and operating expenses $1,028,855, or $346,890 less than in 1920, leaving net revenue from operations of $621,413, an increase of $131,961. After taxes and with the addition of about $6,000 revenue from other sources, net income was $520,229, an increase of $114,581. Deductions for fixed charges from income amounted to $340,861 and dividends on the preferred stock to $97,825, leaving a surplus for the year of $81,452, an increase of $111,618, there being a deficit in the previous year.

Gas Stock Sold

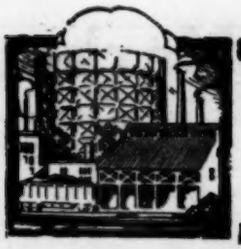
Blyth Witter Company has purchased and announce as sold a block of $366,000 Southern Counties Gas Company twenty-year 5½ per cent first mortgage sinking fund gold bonds, due 1936. The issue price was 90 and accrue accrued interest, yielding about 6.6 per cent.

Pacific G. & E. Continues to Increase Stockholders

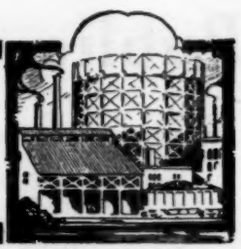
The Pacific Gas & Electric Company continues to increase its number of stockholders through what is known as the "public partnership" idea, carried out by the sale of first preferred stock direct to the company's customers, employees and others. The stock sales department has prepared a table showing the growth of stockholders since the inception of the "public partnership" idea, all duplications resulting from the ownership of both preferred and common stock by the same individual having been eliminated. The number of stockholders has risen from 2,898 in June, 1914, to 18,204 as of Dec. 31, 1921. During this period the company disposed of $26,413,700 par value of stock. There are upwards of 49,000 holders of Pacific Gas & Electric Company's securities, of whom approximately two-thirds reside in California.

General G. & E. Earnings

Statement of subsidiaries of General Gas & Electric Company, for month of Feb., 1922, shows gross of $971,481, compared with $936,541 for same period of previous year, increase of $34,930. Net, after taxes, was $286,273, against $265,380, an increase of $20,893. Combined statement of income of General Gas & Electric and its subsidiaries for the twelve months ended Feb. 28, 1922, showed a gross of $11,527,025; net, after taxes, $3,143,872; and total income, $3,304,709. After deducting $2,029,003, interest on funded debt and dividends on stock held by public, and all other charges, there was a balance of $476,288 applicable to General Gas & Electric Company's first preferred stock. It should be understood that this amount, while applicable to General Gas & Electric Company, does not represent actual cash received by parent company from its subsidiaries.



NEWS OF THE GAS INDUSTRY



Gas Company Gives Good Service, Says Masser

Los Angeles, Cal.—"The Southern Counties Gas Company rendered good service during the 1921-22 winter season now coming to a close and maintained an adequate supply of gas during the year. This condition prevailed generally over the company's system with the exceptions of shortages at Santa Monica Bay and in certain small areas of the territory served. A new 2,000,000 cu. ft. gas holder, designed to eliminate the Santa Monica shortages, is now under construction while reinforcements to the parts of the distribution system which were weak during the coldest days are to be made. Generally speaking, however, Southern Counties Gas Company consumers enjoyed first-class service."

The above statement was made by Harry Masser, gas supervisor of the State Railroad Commission, at the recent hearing before Commissioners Brundige and Benedict in Los Angeles, where the matter of service conditions of the three southern California gas companies were comprehensively studied and investigated. The Southern Counties Gas Company, the Los Angeles Gas & Electric Corporation and the Southern California Gas Company were represented. There were also present representatives of several local cities, the Board of Public Utilities of Los Angeles, and City Attorney Jess Stephens of that city.

The hearing lasted over a two-day period, March 15 and 16. Every phase of the gas situation in Los Angeles and vicinity was studied with the view of preventing a recurrence of inadequate service conditions during the coming winter period. The recent gas shortages in Hollywood, Pasadena, the Wilshire district and other parts of southern California were investigated and the gas companies laid before the commissioners their plans for betterments and extensions which are to be ready for the 1922-23 winter season.

Engineer Lester Ready of the commission and Harry Masser represented the gas department of the commission. These experts will study the building programs of the three gas companies as to the possibility of future gas shortages. Commissioners Brundige and Benedict took the matter under consideration.

Because of the good service rendered by the Southern Counties Gas Company which serves gas locally, and because this company plans to expend $1,500,000 on its 1922 capital budget program, the belief was expressed at the hearing that the company's betterments would adequately take care of any growth on the system, thereby eliminating the possibility of a gas shortage in any of the cities served by the Southern Counties company.

New Jersey and Pennsylvania Gas Associations Will Meet April 26

The New Jersey and Pennsylvania Gas Associations will hold their annual convention at the Bellevue Stratford Hotel in Philadelphia on April 26, 27 and 28. The program and entertainment committees of the New Jersey Association have been working with those of the Pennsylvania Association, and no effort has been spared to make this convention of greatest value to the gasmen of these States.

A brief outline of some of the features planned for the three-day program is given below:

Wednesday, 10 A. M.—Business sessions and election of officers.

Wednesday, 2 P. M.—"Modern Boiler Installations," by E. G. Boyer, of Reading, Pa.

"Why Gas Companies Must Merchandise Appliances in the Biggest Possible Way," by W. M. Halsey, of Newark, N. J.

Thursday, 10 A. M.—"Water Heaters," by H. H. Ganser, of Norristown, Pa.

"How to Reduce the Number of Non-profitable Consumers," by Jacob B. Jones, of Bridgeton, N. J.

Thursday, 2 P. M.—Concert.

"Public Relations," by F. C. Freeman, Providence, R. I.

"Keeping Customers' Accounts," by H. F. Frey, of Allentown, Pa.

Thursday Evening—Annual banquet and entertainment.

Friday, 10 A. M.—"Selling Gas Company Securities," by R. R. Young, of Newark, N. J.

General discussion on advertising.

Yours very truly,

NEW JERSEY GAS ASSOCIATION,
HAROLD E. MASON,
Secertary and Treasurer.

Adirondack Co. to Appeal

The Adirondack Power & Light Corporation will appeal from the decision of the appellate division which decided that the Schenectady gas rate should be $1.25 instead of $1.50, as fixed by the company. Judge Daniel Naylon of Schenectady and Attorney D. J. Kenefick of Buffalo are preparing the case to be taken to the court of appeals. The case, however, will first be taken to the appellate division for a rehearing and if that is not granted the corporation will then appeal to the court of appeals.

New Gas Company Building

A permit for the construction of a $200,000 one-story brick electric transmission station by the Municipal Gas Company, of Albany, N. Y., has been granted by Building Superintendent James M. Nolan. The plant will be erected in the lumber district just north of South Ferry Street. Work on the plant was started at once.

Power and Light Merger

Springfield, Ill.—The Southern Illinois Light & Power Company has filed a petition with the Illinois Commerce Commission requesting permission to purchase and operate the St. Clair County Gas & Electric Company of Belleville and the Staunton Gas Company.

Gas Company Changes Rate

Palmer, Mass.—The Worcester County Gas Company, which was recently granted permission by the Department of Public Utilities to install a monthly charge of 50 cents on its gas meters—provided that at the same time the company reduced the price of gas from $3 to $2.50 per 1,000 ft.—makes the announcement that the new rate will go into effect from April 1, the first bills under the new schedule being rendered May 1.

The company says that since its organization it has struggled against unfavorable odds in trying to serve its customers at a rate which would induce a large use of gas and at the same time pay the cost of producing it, but it is hampered by the wide spread of territory over which its customers are scattered. Many who should use gas still adhere to wood or coal, and many gas consumers use only small amounts, particularly in the winter-time. "Unless the use of gas can be increased the company will be obliged to discontinue its supply," is the statement.

The new rate will create no hardship for the small gas user. If only 1,000 ft. per month are burned the price will be $3, the same as now—$2.50 for the gas and 50 cents for the service charge. But there will be a saving to the large user, as one taking 4,000 ft. a month will pay $10 for the gas and 50 cents for the service, a total of $10.50 against the present price of $12. The company hopes by this method to stimulate the use of gas, as the rate itself will not produce additional revenue except through increased sales.

Will Exhibit Devices That Aid in Gas Conservation

As the time draws near for the annual convention of the Natural Gas Association of America, to be held at Kansas City, Mo., May 15, 16, 17 and 18, the general public, as well as natural-gas men, is becoming interested in the new devices that may be presented for the purpose of giving the consumer the fuel in a more conservative manner and at the same time not lessening the heat value of the gas received. These annual gatherings always bring out a number of features along this line that are of deep interest to the housewife and the husband who pays the gas bill, and year by year the effect is being felt in a better understanding of the industry by the people who are the beneficiaries of this providential commodity. There is no doubt but at the Kansas City convention many ways of saving money in the use of gas will be presented and elucidated in a way calculated to reach the mind of the consumer, so that he will see that the gasmen themselves are actually trying to save the consumer money on his gas bills by having him use the proper burning and heating facilities. For this reason it is believed that the public will be interested enough to attend the exhibits of the supply men attached to the convention, and there will be a clearer understanding of the gas industry by the consumers of the Kansas City district after the convention is over.

Ordinarily annual gatherings of men engaged in technical or industrial vocations are of little interest to the general public, but that does not obtain with the natural-gas men, as their greatest problem has always been on how to educate the consumer in the art of economy by getting all the heat units possible from the least amount of gas through the use of proper appliances at the stove or furnace. Therefore it is not a cause for wonder that the people of the Kansas City district are already talking about the convention, and are making preparations to attend as many days as possible.

$5,000,000 Gas Issue Is Oversubscribed

According to Phil T. Holden, Stockton manager for Blyth, Witter & Co., Western States Gas & Electric Company's new $5,000,000 issue of first and unified 6 per cent bonds, which was brought out recently in leading Pacific Coast cities, was oversubscribed. Blyth, Witter & Co. are the managers for a strong syndicate which offered the issue.

There was a live demand for the securities in Stockton and Mr. Holden anticipates that the offering will not be long on the market.

The bonds are being sold at 94 and interest, to yield 6½ per cent. The issue will provide money for the development of a hydro-electric project on the south fork of the American River.

Columbia Gas & Electric Co. Elects Officers

At the organization meeting of the Columbia Gas & Electric Company Philip G. Gossler was re-elected chairman of the board and also elected president, succeeding A. B. Leach. The other officers were re-elected. Those elected to th executive committee were Murry H. Coggeshall, W. W. Freeman, P. G. Gossler, J. M. Hutton, William P. Philips and Charles P. Taft. The finance committee comprises Murry H. Coggeshall, W. W. Freeman, P. G. Gossler, J. M. Hutton and William P. Philips.

Company Authorized to Lay Gas Main

Nashville, Tenn.—The State Railroad and Public Utility Commission has authorized the Memphis Gas & Electric Company to expend $125,140 in laying a high-pressure main from its plant on Kansas Avenue to a 1,000,000-ft. gas holder in the eastern part of the city. The order was issued following an investigation by engineers of the commission.

70 Per Cent Rate Established

Alden, N. Y.—A recent ruling of the New York State Public Service Commission at Albany, N. Y., has given the required authorization to the Republic Light, Heat & Power Company to maintain a net rate of 70 cents per thousand cubic feet for natural gas furnished Watertown.

The ruling establishing this rate will become effective April 1, 1922.

Delays Rate Reduction

Madison, Wis.—A stay in the execution of the order of the Railroad Commission deducing gas rates in Eau Claire and Chippewa Falls, has been granted the Wisconsin-Minnesota Light & Power Company by Judge E. Ray Stevens in Dane County circuit court. Under this ruling the order of the commission will not go into effect pending settlement of the action against the commission.

UNITED GAS & ELECTRIC COMPANY reports gross earnings of $1,064,926 in February, an increase of $78,525, compared with the similar month last year. The balance after deduction of taxes and charges was $167,411, an increase of $65,262.

San Francisco Has Multiple Uses for Gas

The uses of gas in San Francisco are constantly multiplying, both in home and in industries, states H. M. Crawford, manager of gas sales for the Pacific Gas & Electric Company, who surveys this industry for the San Francisco Chamber of Commerce.

"The popularity of the gas range in this city," declares Mr. Crawford, "has built three large gas-stove manufactories in the San Francisco Bay district. This great industry, companion to the manufacture of gas itself, enables the housewife to secure a new and beautifully all-enameled gas range, with the new method of lighting which requires no matches, the automatic oven temperature control, and other features which make the gas range supreme in its field. Furthermore, the housewife may purchase this great product with the satisfaction that it is made in California.

"A very small part of the public is acquainted with really growing strength of the gas business, and few know that there are more than one thousand uses for gas. In addition to the gas range, there are the many different types of water-heating systems for domestic use; the automatic and storage type, where one need only "turn the faucet" to secure instantly a flow of hot water, day or night.

"Then, there are the many types of house-heating appliances — the modern gas furnace which, placed in the basement, will heat every room in the house at the touch of a button, located where you can reach it from the bed and have the house warm before you get up in the morning. This little furnace is connected to a chimney, so that all objectionable moisture or odor is removed. Only pure fresh air enters the home. For those who prefer steam heat there is a new gas appliance for this purpose which, connected to the usual steam piping, automatically supplies steam heat without the trouble of a janitor. More than one thousand such systems were installed last year in the San Francisco Bay region, and have now relieved their owners from all future worries about heating, which is such an important factor in the health and happiness of the home.

"The newest use for gas, and the one which is perhaps most spectacular, is in the many shops and factories which are being attracted to San Francisco. Heat is used in almost every modern industry to some extent, and gas has been found to be quicker, safer, cleaner and more easily handled by workmen. The result has been its adoption for firing small steam boilers, melting brass and other metals, bakers' ovens, hotel kitchens, for drying lumber, forging, tempering tools, and countless other uses where speed and accuracy of heat control are factors."

Increased Rates for Batavia

Batavia, N. Y.—New York State Public Service Commission has recently authorized the Republic Light, Heat & Power Company to operate in Batavia under a rate of 70 cents per thousand cubic feet net. This is virtually an increase of 15 cents per thousand cubic feet.

"Gas Meeters" Organize

Bridgeton, N. J.—On April 3 the employees of the Bridgeton Gas Light Company met at the company plant and organized a club, with sixteen members present. The club is to be called the "Gas Meeters," and their object is to have a social time and also to get better acquainted with the work each one is doing, and so be better equipped and better posted on the work that is required of them. William Messick gave a short talk on coal and the process it went through from the furnace to the holder. At the next meeting Leonard Watson will tell of the distribution of the gas from the holder to the consumer and at each meeting some one will be assigned to tell of his part in the work. The men are quite enthusiastic and Superintendent Jacob B. Jones gave a short talk commending the men on the steps taken. The officers elected were: President, Lorin E. Allen; vice-president, William Messick; secretary and treasurer, Ralph Harris. The meetings will be held the first Monday night in each month.

Gas Wasted

It is estimated that 150,000,000,000 cu. ft. of natural gas is wasted annually in this country with domestic appliances alone. If this amount of wasted natural gas were replaced by artificial gas at $1.25 per thousand, it would cost $1,000,000 a day.

Gas Company Employees Hear Radio Concert

Gloversville, N. Y.—At the regular monthly get-together of the employees of the Fulton County Gas & Electric office held in the local office, a radio concert received by Harry Dillon furnished the entertainment, together with the orchestra of the company. The affair was well attended, seventy-five employees being present from this city, Johnstown, Fonda and Fort Plain offices, including several of the women workers. Refreshments were served.

Develops from Pipe Fitter to Gas Company Official

Many friends of C. H. Benedict, some years ago connected with the Fulton County Gas & Electric Company, Gloversville, N. Y., but for some time vice-president of the Consolidated Gas Company, in Charleston, S. C., will be interested to know that he has resigned that position and has gone to Des Moines, Iowa, where he has become vice-president of the gas company of that place.

Mr. Benedict commenced his career in Gloversville, twenty-seven years ago, as a pipe fitter with the local company. He soon gained his way into official ranks of the concern and has been going up ever since, landing his vice-presidency job some years ago.

Gas Surcharge in Wichita

Wichita, Kan.—Gas users of Wichita have been ordered to pay one-quarter million dollars to the gas distributing company. Notice that the money will be collected at the rate of $16 extra from every consumer has been served on the city commissioner in a letter from H. O. Carter, general counsel of the Wichita Natural Gas Company, with offices at Bartlesville, Okla.

The $16 is a surcharge which has been held in abeyance since 1920.

Whether the city commission will fight collection in the courts has not been determined. Every city except Wichita served by the Wichita Natural in Kansas has been forced to pay the surcharge.

The surcharge will be collected at the rate of $2 a month until all is paid.

New System of Gas Rates Put Into Effect

Oklahoma City, Okla.—The Corporation Commission has put into effect its new plan for distributing the cost of gas over the summer months, in four orders covering rates at Vinita, Bartlesville and districts furnished gas in northeastern Oklahoma by the Ruth Fuel Company and cities furnished by the Quapaw Gas Company.

The plan is to make a charge of $2 for the first thousand cubic feet of gas used, keeping the price above the first thousand cubic feet at a lower figure than otherwise would be possible.

The rate at Vinita, effective April 1, is $2 for the first thousand cubic feet of gas and 50 cents a thousand for each additional thousand cubic feet. This will make the gas bill bigger in the summertime than it would had the commission made a rate of 63 cents a thousand cubic feet for all domestic purposes, it was pointed out. However, when more is issued in the winter it will reduce the bill considerably, the main purpose of the plan being to distribute the cost of natural gas service throughout the year, it was said. The same rate applies to the districts supplied by the Ruth Fuel Company, and a rate of $2.45 a thousand cubic feet was order for the cities served by the Quapaw company, including Bartlesville and near-by villages.

The new plan is to be in operation for twelve months, so that the customers may get the benefit of the lower rates on the large amount of gas used in the winter as well as the company on the small bills of the summer, the order explained. At any time the commission is able to reduce the gate rate a similar reduction will be made to the customers of the gas companies, the order stated, although the $2 charge will stand for the first thousand cubic feet, the decrease being applied to the charge above the first thousand.

Compromise on Gas Case

Sunbury, Pa.—The Lewisburg Gas Company case has been discontinued because the parties to the contest have agreed upon a compromise on the basis that the price of gas shall be $1.75 per thousand cubic feet, and that the meter charge of 75 cents a month be discontinued.

The parties to the contest appeared before the Public Service Commission at Harrisburg and an order was entered by the commission to the effect that the $1.75 rate shall prevail from Nov. 1, 1921, the date the new tariff as filed by the gas company was to go into effect. This means that all persons who have paid more than at the rate of $1.75 per thousad cubic feet of gas will be refunded anything they have paid over and above that price or they will be given a credit on their bill for gas.

Gas Is Struck at Depth of 1,000 Ft.

Redd's Mill, Pa.—The Monongahela Bellewood Gas Company is drilling a well on the McMillan farm. Gas was struck at 1,000 ft. after drilling through several veins of coal.

The Randolph Equality Natural Gas Company has moved their derrick on the Scott Randolph farm and will commence drilling on their second well this week.

The Greensboro Natural Gas Company struck gas on the Frank Johoskey farm at 1,700 ft.

Gas Company Running Timely Advertisement

The Elmira Water, Light & Railroad Company is running the following advertisement in the daily paper:

PLEASE REMEMBER YOUR GAS AND ELECTRIC METERS IF YOU ARE MOVING

Moving time is coming, when a great many people change their residences. To avoid the possibility of moving into a house where meters have been removed and insure final readings on meters taken at the proper time, customers are requested to arrange for meter changes at least four days in advance. This will help the gas and electric men to take care of their work properly during the rush period.

Applications for meters should be made in writing at the waterlight office in the Hulett Building, Lake and Water Streets, or at the branch office in the Odd Fellows' Building, Main Street, Montour Falls.

Orders to remove meters (final readings) can be given over the 'phone by calling 2400 and asking for dispatcher's office.

Elmira Water, Light & Railroad Company

Public Utility Notes

Report of Denver Gas & Electric Company for twelve months ended Jan. 31, 1922, shows gross of $5,826,711, compared with $5,206,455 for 1921, an increase of $620,256; and net, after taxes, of $2,088,402, against $1,956,184, an increase of $132,218.

Washington, D. C.—U. S. Geological Survey announces that during February, public utility power plants produced 3,484,690,000 kw. hr. of electricity, of which 2,250,802,000 were produced by fuel and 1,233,888,000 by water power. Total combustion of 2,599,374 tons of coal, 998,671 bbl. of fuel oil and 1,600,187,000 cu. ft. of natural gas was required.

Cohoes Power & Light Corporation has applied to the Public Service Commission for authorization to issue $675,000 first mortgage 6 per cent bonds to pay for extensions to its plant, total cost of which is estimated at $900,000 and which is expected to double its present capacity.

Report of Indiana Service Corporation for twelve months ended Dec. 31, 1921, shows gross revenues, including outside income of $2,882,341 compared with $2,884,543 for the previous year, a decrease of $2,202. Balance after operating expenses, taxes and reserves was $573,465 compared with $534,128 in 1920.

Report of the New Jersey Power & Light Company for twelve months ended Feb. 28, 1922, shows gross of $527,168 compared with $473,873 for the corresponding period in 1921, an increase of $53,168; net after taxes was $163,085 compared with $142,256 and balance applicable to General Gas & Electric Company was $64,824 against $64,679 in 1921, an increase of $145.

Worcester Gas Light Company has been authorized by Massachusetts Department of Public Utilities to issue 1,857 shares of its stock to be sold at not less than $100 a share.

Northern Iowa Gas & Electric Company, a West Virginia corporation, has been authorized by the Secretary of State to increase its capital stock from $1,000,000 to $3,000,000.

Helena Light & Railway, a J. G. White company, reports gross for

February of $33,103 compared with $30,518 in 1921. Net after charges was $4,010 against $2,599 in Feb., 1921. Twelve months gross was $388,513, an increase of $14,760 over 1921 and net after charges $32,725 compared with $32,250 in 1921.

Milwaukee, Wis.—According to J. P. Pulliam, president of Wisconsin Gas & Electric Association, $50,000,000 will be spent in Wisconsin during 1922 in public utility improvements. Wisconsin Telephone Company plans to spend $5,000,000 for construction work and Milwaukee Electric Railway & Light Company has extension work involving $6,000,000 in view.

Wants Bids on Reservoir Construction

The City of Duluth Water and Light Department expects to advertise within the next week or two for competitive bids for constructing a 14,000,000-gal. reservoir of reinforced concrete. Bids will be received upon the unit basis for the different quantities, such as earth and rock excavation, several classes of concrete, laying of water pipe up to 24 in. in diameter, constructing roadway, blowoffs, etc. The reservoir will have a concrete column, beam and slab roof. The announcement was made by D. A. Reed, manager of the Water and Light Department.

Will Enlarge Gas Facilities

New Albany, Ind.—As an evidence of faith in the future growth of New Albany, the Interstate Public Service Company has let contracts for the enlargement of the gas plant far beyond the plans which it had under consideration some time ago.

Several years ago the company built at Jeffersonville one of the largest gas holders in the Falls Cities. The Jeffersonville gas holder has a capacity of 250,000 cu. ft. of gas. The improvements to the Jeffersonville gas plant and the capacity of the holder will take care of the growth of that city for many years.

In order to keep pace with progress of New Albany it was decided to build here a new 300,000-ft. gas holder similar to the Jeffersonville holder, install additional plant equipment and put in where needed high-pressure mains.

The Interstate Public Service Company announced that the contract had been let to the Western Gas & Construction Company, of Fort Wayne, Ind., for additional generating equipment, which is now being manufactured at the Fort Wayne plant, which will also build the large 300,000-ft. gas holder on Interstate property adjoining the present gas plant.

The plans include high pressure mains on Culbertson and Ekin Avenues to Silver Street. Gas can be forced through the line at initial pressure of six to eight pounds if necessary. There will be reduction stations on Vincennes and Silver Streets. These reducing stations will connect with low-pressure mains and reinforce the service in the entire east and north parts of the city, and when completed will insure to consumers an ample supply of gas at all times.

The proposed improvements to the New Albany gas plant will more than double the capacity, and while a daily output of 750,000 cu. ft. of gas will not be required to supply the needs of the present gas consumers, it is being built for the purpose of taking care of the growth of the city, which the Interstate Public Service Company believes will naturally increase in population in addition to the people and industries the company hopes to interest in this community. Extensions will also be made with a view of supplying the demand of the General Electric Company, which will build a million-dollar lamp works near Glenwood Park when business conditions return to normal.

New Gas Service to College Park

San Jose, Cal.—Following the announcement of the San Jose Water Company that it would install a new water main in College Park comes the information that the Pacific Gas & Electric Company will expend $10,580 for a new gas main to serve this rapidly building-up district.

The new main will be a six-inch one and will give users high pressure service. Starting at the gas works the main will proceed down Stockton Avenue to Emory Street, west on Emory to Elm, north on Elm to Hedding and west on Hedding to the Alameda. Work will be started immediately.

Contracts Awarded

The Southern Dutchess Gas & Electric Company, of Beacon, N. Y., has awarded contract for the delivery and erection of a 5-ft. double superheater carbureted water-gas apparatus, with reverse steam connections, blower, operating platform, steam hoist and fuel buggy with hopper for charging the generator, condenser and gas connections, to the Gas Machinery Company, of Cleveland, Ohio.

The gas and electric company is putting up a new building for the installation of the above equipment and when this machinery is installed the company will have sufficient capacity to meet its increased demands and continue the supply of the excellent service that it has given in the past.

A contract has recently been placed by the Interstate Public Service Company for a 300,000 cu. ft. capacity three-lift holder in steel tank. This holder will very materially increase the storage capacity at its plant at New Albany, Ind. Contract for the new holder has been placed with the Western Gas Construction Company.

Plan Extensive Improvements in 1922

Public utility companies of Wisconsin are to spend $50,000,000 in improvements and extensions in 1922, the biggest program for one yead that has ever been outlined, according to J. P. Pulliam, president of the Wisconsin Gas and Electrical Association. This will mean employment for thousands of men. Mr. Pulliam terms it strongest proof that these companies can see substantial business growth and prosperity ahead. Among the larger of these plans announced are: The Milwaukee Gas Light Company, $1,000,000 in Milwaukee exclusively; the Milwaukee Electric Railway & Light Company, $6,000,000 in the city and its suburban territory; the Wisconsin Telephone Company, $5,000,000 in the State; the Wisconsin Public ervice Company, $2,000,000: the Wisconsin Gas & Electric Company, $4,250,000, and the Wisconsin-Minnesota Light & Power Company, $1,930,000 for a large reservoir on the Chippewa River.